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A GENERIC SYNOPSIS OF THE HEMIPTEROUS SUPERFAMILY ALEYRODOIDEA

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Probably no group of insects has received more sporadic attention than aleyrodids, or white flies. This is to be expected, however, of a group whose members are so small in size and so inconspicuous in nature as to be passed over by the casual collector.

The Aleyrodoidea consists of a single small and unique family. It exhibits certain peculiar specializations on one hand and striking uniformities on the other.

The metamorphosis is imperfectly understood and has remained an unsolved problem; it appears to be a neometabolic type. The shape and form of the vasiform orifice in pupal cases of the two major subfamilies vary greatly, but in the adults it is rather uniform as regards shape and structure. The wax pores that are often so conspicuous in the nymphal stages are not carried over to the mature forms. Most mature males and females, except for variations in wing venation and antennal segmentation, are very much alike, but the pupal cases exhibit differences on the order of those mentioned for the vasiform orifice for wax pores and the margin and other parts of the case.

In the past, several schools of opinion prevailed regarding the phylogenetic position of the group. It was placed with the moths or coccids or aphids or chermids. Quaintance and Baker (1913), using wing venation and tarsal and genital characters, placed the family as then understood near the Chermidae (Psyllidae). This view of the relationship appears to be the correct one.

The family Aleyrodidae, for the most part, is restricted to the tropics and subtropics, but extensions far into the cooler regions occur. Members of the family occur in the open in the northern part of the East Coast of the United States and in the British Isles. In California, several species have been found well above 5,000 feet in the Sierra Nevada mountains. One species has been found at about 11,000 feet on the Volcan de Chiriquí, Panamá.

BIOLOGY

The biology of the family Aleyrodidae appears to be remarkably uniform throughout. All species live on the leaves of plants, generally on the undersides. As far as is known, all of the plants utilized by aleyrodids as hosts are angiosperms; coniferous trees have not been reported as hosts.

Reproduction seems to be primarily sexual, but parthenogenesis occurs to some extent. Unfertilized eggs develop into males while fertilized eggs develop into both males and females. The eggs are elongate-oval in shape and stalked; the surface may be sculptured.

The method of depositing the eggs by the females varies. As has often been noted, some females thrust the proboscis into the tissues of the leaf; and with it as a pivot, move in the form of a circle, within which the eggs are laid, and which appears white because of the deposition of waxy powder from the body of the female. The female may keep this position for as long as 48 hours at a time and may not fly away even if disturbed. In some species, the eggs are laid in clusters, while in others they are placed irregularly over the surface of the leaf.

If food and other conditions are favorable, the number of eggs laid may be quite large; 150 to 200 eggs have been recorded from a single female of *Neomaskellia bergii* (Signoret); a single female of *Aleyrodes protella* (Linnaeus) laid 219 eggs in 70 days. The eggs are laid mostly in the summer time, but in areas of mild climates eggs may be deposited throughout the year.

After emerging from the egg, the first instar nymph wanders about for some time, up to 12 hours in one case, and then attaches itself to the leaf. All the following instars are spent in the same spot, the adult emerging from the last nymphal or pupal case.

The usual number of nymphal stages is four. According to Baker (1937) six stages besides adults and eggs occur in *Aleyrodicus dugesii* Cockerell. The first instar nymph is usually transparent or whitish in color and rather small; it is often devoid of structures that appear in later stages. Baker noted that in the first instar

nymph of *A. dugesii* the compound pores are entirely absent, but that the anterior and caudal compound pores are developed early in the second stage and that they are then lost to be replaced by two pairs of median pores. The median pores are in turn lost, and the anterior and caudal pores reappear associated with the four pairs of abdominal pores, in subsequent instars.

The pupal cases of many species produce varying amounts of waxy secretion from papillae or simple or compound pores. The two anterior compound pores of *Hexaleurodicus ferrisi* secrete clear, curved waxy filaments up thirty times the length of the case. There may be marginal, fringe-like or ventral palisade-like secretions also. The wings and body of the adults are covered with a waxy meal. It may be noted here that the fluff of the cases of some species is abundant enough to offer shelter to small coccids.

A slight though noticeable amount of dimorphism may appear in the pupal cases. The female pupal case of *Dialeurodes kirkaldyi* (Kotinsky) is smaller and more rounded than that of the male.

The adults leave the pupal case through the so-called T-slit in the dorsum. This opening is formed by a weak longitudinal suture that starts at the anterior edge of the case and meets the transverse thoracic slit that separates the cephalothorax from the abdomen.

Immediately after emergence, the adults of many species begin to feed by the side of the empty cases. The crumpled wings begin to unfold in about twenty minutes. In the meantime waxy fluff grows out of the ventral abdominal glands in the form of silky filaments; this is transferred to the wings, antennae, and the rest of the body with the aid of the spinose legs. This operation takes several hours, after which the adults begin to move about. The insects are fully matured one or two days later.

Both male and females are winged, having four membranous wings without cross veins. There is sexual dimorphism only to the extent of differences in genitalia, slight differences in male antennae, and in the slightly smaller size of the male.

Copulation takes place from side to side, and lasts for about fifteen minutes. The male approaches the female and begins to tap her wings with his antennae, occasionally flapping his wings at the same time. The female sits passively all this time. This action lasts about five minutes, and then the male takes up a position by the side of the female, a pair of wings overlapping the other pair of the other, the heads pointing in the same direction, the tips of the genitalia at length gradually approaching. Oviposition begins shortly after copulation.

The females of some species keep the wings spread out transversely during the act of ovipositing and keep them in that position for hours at a time.

Some species of aleyrodids have two generations a year. The insects overwinter in a quiescent pupal stage, and the adults emerge in the spring. Eggs are laid and a summer generation develops. Some species are known to have only one generation a year; such species apparently overwinter as the first instar nymph on dead leaves.

Like aphids, aleyrodids are often attended by ants. Singh (1931) thinks that the attendance of ants is essential to the well-being of *Dialeurodes trilobitoides* Quaintance and Baker, since pupal cases kept in cages away from ants failed to develop as they invariably became overgrown by a fungus. He suggests that the removal of the honey-dew excreted by the aleyrodids is the means of preventing the growth of fungi.

ECONOMIC ASPECTS

A few species of aleyrodids are of economic importance. The depredations of *Dialeurodes citri* (Ashmead) on a great variety of hosts and *Trialeurodes vaporariorum* (Westwood) in greenhouses are well-known. *Aleurolobus barodensis* (Maskell), *Bemisia tabaci* Gennadius (= *B. gossypiperda* Misra and Lamba, *B. hibisci* Takahashi, according to Takahashi, 1935), and *Trialeurodes ricini* Misra are pests of sugarcane, cotton, and *Ricinus* respectively, in India. *Aleurocanthus rosae* is a pest of roses at times. *Bemisia giffardi* (Kotinsky) has been recorded as a pest of citrus in Japan. *Trialeurodes varia* Quaintance and Baker is occasionally troublesome on a species of *Philadelphus* in Mexico. Several species of the genus *Bemisia* are vectors of virus diseases in various parts of the world. *Aleyrodes pruinosa* often attacks the California Christmas berry in great numbers. Generally speaking, aleyrodids are of secondary importance as pests; various predators and parasites keep them well in check.

SYSTEMATIC REVIEW

Cestone, in the 17th century, is said to have published the first known account of an aleyrodid, but the account is not available.

Réaumur (1734) described and discussed the same aleyrodid in detail. He placed it among the moths.

Linnaeus (1758) conferred the name *Phalaena (Tinea) protella* upon the insect. He likewise considered it to be a moth.

Latreille (1796) recognized the hemipterous nature of the insect. He founded the genus *Aleyrodes*, but placed no species in it. It was not until 1810 that *protella* was given as the type of the genus, along with the generic characters.

Burmeister (1835) unnecessarily altered the name *Aleyrodes* to *Aleurodes*, with the result that both names are current in modern literature. The latter name has been greatly used as a base in the formation of new names.

Westwood (1840) established the family name.

Menge (1856) described *Aleyrodes aculeata* from Prussian amber of the Ligurian Horizon.

Signoret (1868) brought out the first monograph on the family from a world standpoint, discussing 23 species, of which six were described as new.

Douglas (1892) erected the important genus *Aleurodicus*.

Maskell (1895) listed the species of the world, describing 22 new ones to bring the total to 66 species.

Quaintance (1900) catalogued the American species.

Cockerell (1902) listed the species of the world and proposed the subgenus *Dialeurodicus* in the genus *Aleurodicus*, and the subgenera *Asterochiton*, *Dialeurodes*, *Trialeurodes*, and *Tetraleurodes* in *Aleyrodes*.

Peal (1903) described seven new species and listed 16 more from the Orient.

Bemis (1904) described as new 19 of 23 species recorded from California.

Kirkaldy (1907) published a systematic and bibliographic catalogue of the species of the world, together with the descriptions of six new species by Kotinsky. Tullgren (1907) established the genus *Aleurochiton*.

Quaintance (1909) listed 141 species. Enderlein (1909) erected the genus *Udamoselis*.

Kuwana (1918, 1927) published on Japanese aleyrodids.

Quaintance and Baker (1913, 1914) comprehensively revised the family. In the new subfamily Aleurocidinae two new genera were erected; in the subfamily Aleyrodinae 16 new genera were split from the old genus *Aleyrodes*. These papers form the basis of the modern classification of the family.

Cockerell (1919) described a species of the genus *Aleurodicus* from Burmese amber.

Hempel (1922, 1923) erected 10 new genera, and Bondar (1923) described nine genera as new from South America.

Corbett (1926, 1935) erected six new genera from Ceylon and Malaya and described well over a hundred new species.

Singh (1931) catalogued the Indian white flies and erected the genus *Aleuroclava*. Biological notes on many species were included.

Takahashi (1932, 1934, 1935, 1938, 1940) has written on the Aleyrodidae of Japan and Formosa, as well as on those from other parts of the Orient.

Solomon (1935) described the genus *Synaleurodicus* from Australia.

Baker (1937) catalogued the Mexican species of aleyrodids.

Drews and Sampson (1940) listed the genera and subgenera. Trehan (1940) classified the British Aleyrodidae and erected the genus *Asterobemisia*. Biological notes were included.

Sampson and Drews (1941) reviewed the Aleyrodidae of Mexico, erecting the new subfamily Uraleyrodinae for the genus *Uraleyrodes* and describing as new four other genera and 22 species. Sampson (in press) described the genera *Septaleurodicus* and *Hesperaleyrodes* from Mexico.

GENERIC CHARACTERS

The pupal case: As indicated previously, pupal cases offer significant taxonomic features. Aside from such rather indefinite characters as size, shape, and color, the most promising characters of the pupal case lie in the margin, the setation, the number and type of wax pores, the presence or absence of thoracic and anal ducts and pores or combs, and the vasiform orifice. In some instances, the presence of various kinds of papillae is very useful, as are the various sutures which may occur on the dorsum.

The outline of the margin may be entire, irregular, or toothed. There may be another row of teeth behind the margin. In a few genera the sides of the case are deflexed ventrally so that the margin is difficult to see; in these cases, the apparent margin is in reality the lateral outline of the dorsum. The submarginal area may be separated from the margin by a line and may contain papillae or setae or both. The posterior edge of the case may be prolonged.

Pores may be present on the dorsum. The number and type of pores is of great importance, especially when compound wax pores are involved. The compound pores are of varying sizes and structure. Some are cup- or saucer-shaped with a small central rod or a circle of thin rods; some of the latter type may have a number of concentric rings of small papillae or teeth on the bottom of the cup. Others types of pores may be bell-shaped and have a small central process, or they may be deeply cup-shaped and have an extremely

long central process surrounded by long rod-like spinnerets. The central process may be split into numerous rods and the spinnerets may be much reduced in yet another type. The structure of a few pores is quite complicated, having not only a central process with spinnerets, but small pores, papillae, pyramids, or striations. A primitive type of pore appears to be one with several small pores within a circle.

Agglomerate pores may be present also. They are formed by a clear margin within which is a central area composed of numerous small papillae or rod-like pores, giving this area the appearance of a brush.

Simple pores are clear areas surrounded by a chitinized rim.

Suture-like lines or folds on the dorsum are used as generic characters.

Thoracic tracheal ducts, generally known as tracheal folds, occur on the cephalothorax. They end at the margin of the case in a more or less circular pore or in a comb of teeth. A perhaps similar duct, the anal fold or furrow, often occurs behind the vasiform orifice; it also may end in a comb or pore.

Papilla-like pores may be present on the dorsum. Mammiform pores are sometimes present.

The presence of setae is often a valuable generic character. The position of the setae is of prime importance, stress usually being placed on those in the submarginal area. The setae occasionally seem to be segmented.

Probably the structure providing the most significant characters is the vasiform orifice. The shape of the orifice may vary from subcircular to elongately triangular. The orifice may be elevated or situated in a pit. It may be surrounded by a trilobed figure or the caudal edge may be prolonged. The operculum may vary from transversely rectangular to subcircular in shape. It may fill less than half of the orifice or it may fill it entirely, in which case the operculum usually has the same shape as the orifice. The lingula may be long and thin, expanded or lobed at the tip. It may be conical, spatulate, or strongly rounded in shape. It may bear two or four setae and be included in or excluded from the orifice. Both the lingula and the operculum may be highly setulose.

The adults: Of the adults, the male offers more characters than the female. Unfortunately, adults have not been well described in past diagnoses; consequently it is nearly impossible to derive any information of generic value from the literature. One reason for the lack of good descriptions of the adult insects may lie in their

wide-spread structural uniformity. It may be, however, that this uniformity is the result of casual observation.

The head is somewhat triangular in shape and is carried in such a manner that its anterior surface is directed ventro-caudad. The vertex is rounded in most forms, though in others it is produced into a large cone-shaped structure. The frons are sometimes produced beyond the vertex.

Neither the compound eyes nor the ocelli are known to possess characters of generic value.

The antennae are placed in shallow sockets just below the eyes. They generally have seven segments, but the number may be as low as three. The antennae of the male may show slight differences—the second segment may be enlarged and club-shaped, or the number of segments may be more reduced than it is in the female.

The veins of the wings are useful for distinguishing genera and higher categories. They must be used with caution, however; there are many genera with the same number of veins which, at the present time, are not easily separated. Generic differences are based upon the presence or absence or combinations of the subcostal, radial₁, radial sector, medial, cubital, and anal veins. The number of flexures in the radial sector vein is a useful feature.

The paronychium of the tarsi is used to separate subfamilies. Its length and thickness are of doubtful generic value. It is spine- or blade-like.

The vasiform orifice, unfortunately, is not often mentioned in descriptions involving adults. It is felt certain that it will be found to be a character of value.

The genitalia appear to be a structure of value only in the male. The shape and armature of the claspers may vary somewhat, but as a rule are forcipiform, being curved at the distal end and armed with teeth or setae. The penis is simple, but in a few cases it is bifurcate. The female genitalia are stout and simple and appear to have no taxonomic significance.

GENERAL SYSTEMATICS

Major groupings higher than genera in present classifications are based primarily on wing venation and secondarily on characters of the pupal case. With respect to genera, the reverse is true. Consequently, it is difficult to formulate a natural classification. Enderlein (1909), for example, defined the subfamily Udamoselinae as having the costal and subcostal veins distinct. But studies by Solomon (1935) on the genus *Synaleurodicus* indicate that the posi-

tion of the genus *Udamoselis* in a separate subfamily is unnecessary.

The subfamily Siphonaleyrodinae Takahashi (1932) is placed in the Chermidae (Psyllidae). G. F. Ferris (*in litt.*) has pointed out that the pupal cases of the nymphs upon which the subfamily and genus were based are without doubt triozone nymphs of the first or second instar. The ring of pores around the anal opening is a chermid character. The "siphons," which are really sectasetae, and the body division between the thorax and abdomen are characteristic of triozone nymphs. The subfamily Siphonaleyrodinae is in all probability a synonym of the chermid subfamily Triozinae. It is impossible at this time to ascertain the validity of the genus since only the early immature forms are known. The subfamily Uraleyrodinae Sampson and Drews (1941) is left in the Aleyrodidae, since its characters to a reasonable degree fall within those given for the family.

A new generic classification, based on a reshuffling of characters is desirable; this is undertaken in a small way in this paper. A few tribal divisions are tentively indicated. Due to the scarcity of adult characters given in aleyrodid descriptions, the keys are based primarily on characters of the pupal cases.

It is quite possible that, when the taxonomic characters of the adults are well worked out, most of the genera described from pupal cases will be placed as subgenera under a small number of genera based on male and female imaginal characters. Such a classification might be a more natural one, as it is by no means certain that the pupal cases, as a secondary and highly specialized stage, are of any phylogenetic significance.

Superfamily **ALEYRODOIDEA** Handlirsch

Aleurodoidea Handlirsch, 1903, Sitzungber. der Kais. Akad. d. Wiss. (Wien), math.-naturw. Klasse, 112: 738. (Suborder.)

Aleurodides Handlirsch, 1925, *in* Schröder, Handb. der Ent., p. 1128. (Suborder.)

Aleurodoidea Handlirsch, 1925, *in* Schröder, Handb. der Ent., p. 1128. (Superfamily.)

Homoptera-Aleurodinae Haupt, 1934, Deutsch. Ent. Zeitschr. Jahrg. 1934, p. 129. (Superfamily.)

Aleurodoptera Pierce, 1936, Ent. News, 47: 258. (Order.)

Small insects. Pupal cases scale-like, fixed; dorsum of case with simple or compound wax pores or with elongate siphon-like wax tubes; anal opening dorsal, situated some distance from caudal

margin. Adults free, covered with mealy wax, with two pairs of wings; anal opening dorsal, situated some distance cephalad of genitalia.

It is to be noted that Handlirsch first (1903) used the designation Aleurodoidea as a suborder in the order Homoptera (Leach) in the new subclass Hemipteroidea. On the same page the suborders Auchenorrhyncha, Psylloidea, Aphidoidea, and Coccoidea were erected.

Family **ALEYRODIDAE** Westwood

Aleyrodidae Westwood, 1840, Mod. Classif. Insects, p. 442.

Aleurodidae of authors.

Small to minute insects. Eggs stalked; nymphs fixed after first instar; adults free. Mouthparts suctorial. Metamorphosis neometabolous. Most species with a waxy secretion. Living on leaves only of angiosperms.

Pupal case: Pyriform to elongately elliptical in shape. Margin smooth, slightly irregular, or toothed; often with two rows of teeth. Thoracic tracheal folds and pores often present; anal furrow often present. Dorsum with T-shaped slit on anterior portion. Simple, agglomerate, or compound wax pores often evident. Various types of papillae often present. Setae present. Vasiform orifice present, usually visible from above, occasionally hidden by caudal horn. Operculum contained within orifice, variously shaped. Lingula included or excluded; with no or two or four setae. Antennae present, usually three-segmented. Legs present, two- or three-segmented, a single spine-like claw on the rudimentary tarsus. Marginal or dorsal wax secretion often present. Color translucent to dense black, rarely reddish or greenish.

Adults: Head with front rounded or conical. Labium long, three-segmented, with four setae. Compound eyes reniform or divided, with one ocellus above each. Antennae seven-segmented, occasionally three-, four-, five-, or six-segmented; with peg or fringe sensoria at least on third, fifth, and seventh segments; third segment usually the longest. Thorax with small pronotum, large mesonotum, and small postnotum. Wings with anterior pair larger than posterior pair, without cross veins; radial sector vein always present, with or without costal, subcostal, radial₁, medial, cubital, and anal veins; hyaline, spotted, banded, dusky, or completely black in color; anterior margin with bead-like projections. Legs composed of the usual segments; tarsus two-segmented, with two claws and a spine- or blade-like paronychium (occasionally absent). Ab-

domen of eleven segments. Vasiform orifice transversely elliptical. Operculum transversely rectangular. Lingula long and thin, excluded. Genitalia of male forcipiform, of female stout and simple.

KEY TO SUBFAMILIES OF THE ALEYRODIDAE

(Pupal cases)

1. Vasiform orifice hidden by caudal horn.....URALEYRODINAE
Vasiform orifice visible 2
2. Case with compound or agglomerate pores; if with simple pores, case thin and flat, operculum transversely rectangular, lingula conical and included; tracheal folds rarely present; margin smooth or with one row of teeth.....UDAMOSELINAE
Case without compound or agglomerate pores; tracheal folds often present; margin often with two rows of teeth.
ALEYRODINAE

KEY TO SUBFAMILIES OF THE ALEYRODIDAE

(Adults)

1. Paronychium spine-like; fore wing may have costal, subcostal, radial₁, cubital, medial, and anal veins UDAMOSELINAE
Paronychium blade-like; fore wing may have radial₁ and cubital veins ALEYRODINAE

Subfamily UDAMOSELINAE Enderlein

Udamoselinae Enderlein, 1909, Zool. Anz., 34: 231.

Alenrocinae Quaintance and Baker, 1913, U. S. Dept. Agric., Tech. Series, Ent., 27(1): 25.

Pupal case: Typically flat and thin, large in size, generally ovate in shape. Margin of case entire or with one row of teeth. Thoracic tracheal folds and pores rarely present. Compound or agglomerate pores often present. Dorsal rays occasionally present. Vasiform orifice varying in shape from transversely elliptical to elongately triangular. Lingula typically large and spatulate or conical, exposed, and with two or four setae. Operculum usually transversely rectangular, not filling the orifice.

Adults: Large in size. Head with vertex rounded or cone-shaped. Antennae typically seven-segmented, occasionally three-, four-, five-, or six-segmented. Fore wings hyaline, spotted, banded, or dusky; with subcostal (rarely), radial₁ (generally), radial sector (always), medial (nearly always), cubital (occasionally), and anal (rarely) veins. Paronychium of tarsi spine-like. Vasiform orifice

transversely elliptical. Operculum transversely rectangular. Lingula long, narrow, pointed, and excluded.

Wing venation shows an almost perfect gradation from *Udamoselis* to *Paraleyrodes* and *Septaleurodicus*. In *Udamoselis*, the edge of the wing is generally held to be the costal vein; subcostal, radial₁, radial sector, medial, cubital, and anal veins are present. In *Synaleurodicus*, the subcostal vein, if present, is not so distinct as it is in the above genus; radial₁, radial sector, medial, cubital (as a strong line), and anal veins are present. In the genus *Ceraleurodicus* radial₁, radial sector, medial, and cubital veins are distinct; traces of the anal vein occur. In the genera *Bakerius* and *Leonardius* radial₁, radial sector, medial, and cubital veins are present. In *Octaleurodicus*, the radial₁, radial sector, and medial veins are distinct, the cubital vein being reduced or represented by a line. In *Aleuronudus*, the radial₁, and cubital veins are reduced or represented by a line, while radial sector and medial veins are distinct. In the genera *Dialeurodicus* and *Hexaleurodicus* radial₁, radial sector, and cubital veins are present. The genus *Paraleyrodes* retains the radial sector and a portion of the cubital vein. In *Septaleurodicus* there remains only the radial sector.

The vertex of the head is cone-like in *Udamoselis*, *Leonardius*, *Octaleurodicus*, and *Dialeurodicus*. In the other genera it is rounded.

On the basis of wing venation and the shape of the vertex there is no reason for separating this group into two subfamilies. Solomon (1935) also came to this conclusion.

The name *Udamoselinae* Enderlein is used here with the greatest reluctance. The genus and species upon which it is based were described from a single male specimen lacking antennae, and the paronychium was not visible (it was not stated that it was *absent*). Both *Udamoselis* and *Aleurodicus* were included in the subfamily which was separated from the *Aleyrodinae* on the basis of wing venation. The name *Aleurodicinae* is certainly a better one.

In the following keys, only the genera not known from pupal cases are keyed out as adults.

KEY TO GENERA OF THE UDAMOSELINAE

(Pupal cases)

- | | |
|---|-----------------------|
| 1. Dorsal trachea-like rays present | 2 |
| Trachea-like rays absent | 3 |
| 2. Compound pores present | <i>Ceraleurodicus</i> |

- Compound pores absent *Bondaria*
3. Simple pores present *Dialeurodicus*
Compound or agglomerate pores present 4
4. Eight pairs of compound pores present *Synaleurodicus*
Seven pairs or less of pores present 5
5. Seven pairs of pores present ; if with six pairs, lingula spatulate
and excluded 6
Less than seven pairs of pores present 11
6. Posterior three pairs of compound pores small *Aleuronudus*
At most posterior two pairs of pores small 7
7. Agglomerate pores present *Leonardius*
Compound pores present 8
8. Lingula spatulate and excluded 9
Lingula conical and included 10
9. Central process of compound pores split into numerous rods,
spinnerets reduced *Paraleyrodes*
Central process entire, elongate, spinnerets rod-like.
Aleurodicus
10. Two distinct sizes of compound pores present, posterior edge
of vasiform orifice prolonged *Nealeurodicus*
Three distinct sizes of compound pores present, posterior edge
of vasiform orifice not prolonged *Hexaleurodicus*
11. Lingula strongly rounded *Eudialeurodicus*
Lingula spatulate or conical 12
12. Sides of case deflexed to meet shortened ventral disc.
Lecanoideus
Sides of case not deflexed 13
13. Compound pores on abdomen situated near central ridge.
Octaleurodicus
Compound pores situated laterally 14
14. Three pairs of compound pores present *Bakerius*
Five to six pairs of compound pores present *Metaleurodicus*

KEY TO GENERA OF THE UDAMOSELINAE

(Adults)

1. Subcostal and anal veins present 2
Radial sector vein only present 3
2. Vertex cone-shaped *Udamoselis*
Vertex rounded *Synaleurodicus*
3. Antennae seven-segmented *Septaleurodicus*
Antennae three- and four-segmented *Paraleyrodes*

Genus *Udamoselis* Enderlein

Udamoselis Enderlein, 1909, Zool. Anz., 34: 231.

Adults: Head with cone-shaped vertex. Antennae missing. Fore wing with costal, subcostal, radial₁, radial sector, medial, cubital, and anal veins. Paronychium stated not to be visible. Claspers of male genitalia narrowly oval in outline and very long. Penis short.

Genotype: *Udamoselis pigmentaria* Enderlein, 1909.

Genus *Ceraleurodicus* Hempel

Ceraleurodicus Hempel, 1922, Not. Prelim. Rev. Mus. Paulista, 2: 6.

Radiaeurodicus Bondar, 1923, Ind. e Obras Publ. da Bahia, Sec. Patol. Veg., p. 13.

Ceraleurodicus Hempel, Costa Lima, 1928, Suppl. Mem. Inst. Oswaldo Cruz, 4: 137.

Pupal case: Oval in shape, large in size. Margin entire, but widely and evenly divided behind. Four to six pairs of compound wax pores present: one on thorax, three to five on abdomen, all cup-shaped, with a small rod not extending beyond the edge of the cup and with concentric rows of small papillae or facets on the bottom. Eighteen to twenty trachea-like rays or ridges on dorsum. Vasiform orifice cordate to subcordate. Operculum transversely rectangular. Lingula conical and included.

Adults: Head with vertex produced but not conical. Antennae seven-segmented. Fore wings spotted, with radial₁, radial sector, medial, and cubital veins; and at times the anal vein. Claspers of male genitalia long and straight, the tip slightly upcurved. Penis about half the length of claspers, tip sharply upcurved.

Genotype: *Ceraleurodicus splendidus* Hempel, 1922.

This genus contains the largest pupal cases in the family; the largest examples of *C. bakeri* (Bondar) are five mm. in length and three mm. in width.

Genus *Bondaria* Sampson and Drews

Bondaria Sampson and Drews, 1941, An. Esc. Nac. de Cien. Biol., 2: 149.

Pupal case: Elliptical in shape, large in size. Margin of case entire; submarginal area separated from dorsal disc by a thin line. Compound wax pores absent. Eighteen rays on dorsum. Vasiform

orifice subcordate. Operculum transversely rectangular. Lingula roundly triangular or broadly conical, included.

Genotype: *Bondaria radifera* Sampson and Drews, 1941.

Genus *Dialeurodicus* Cockerell

Dialeurodicus Cockerell, 1902, Proc. Acad. Nat. Sci. Philadelphia, 54: 283. (Subgenus.)

Dialeurodicus Cockerell, Quaintance and Baker, 1914, U. S. Dept. Agric., Tech. Series, Ent., 27(2): 97. (Genus.)

Pupal case: Moderately large in size, ovate in shape. Margin entire or slightly dentate. Thoracic tracheal folds occasionally present. Simple pores only present, often grouped together. Vasi-form orifice cordate to subcordate. Operculum transversely elliptical to rectangular. Lingula conical and included.

Adults: Head with vertex cone-shaped. Antennae seven-segmented. Fore wings often spotted, with radial₁, radial sector, and medial veins. Claspers of male genitalia long and straight.

Genotype: *Aleurodicus cockerellii* Quaintance, 1900.

Genus *Synaleurodicus* Solomon

Synaleurodicus Solomon, 1935, Jour. Roy. Soc. W. Australia, 21: 9.

Pupal case: Moderate in size, ovate in shape. Margin entire, but with a narrow marginal band behind it. Eight pairs of compound pores of a primitive type, lacking a central process, but possessing small pores (spinnerets?). Vasiform orifice subcircular. Operculum transversely rectangular. Lingula conical and included.

Adults: Head with vertex rounded. Antennae seven-segmented. Fore wings without color, with radial₁, radial sector, medial, and anal veins distinct; subcostal vein, if present, less distinct, cubital vein represented by a clear, conspicuous line. Claspers of male genitalia somewhat sigmoid in shape.

Genotype: *Synaleurodicus hakeae* Solomon, 1935.

Genus *Aleuronodus* Hempel

Aleuronodus Hempel, 1922, Not. Prelim. Rev. Mus. Paulista, 2: 5.

Pentaleurodicus Bondar, 1923, Ind. e Obras Publ. da Bahia, Sec. Patol. Veg., p. 85.

Aleuronodus Hempel, Costa Lima, 1928, Suppl. Mem. Inst. Oswald Cruz, 4: 137. (Synonymy.)

Pseudaleurodicus Hempel, Costa Lima, 1936, Tere. Cat. dos Insectos. . . do Brasil, p. 146. (Further synonymy.)

Pupal case: Large in size, ovoid in shape. Margin entire; marginal area separated from rest of body by a thin line, divided into wide areas by lines from the margin. Seven pairs of compound pores on dorsum: one thoracic and six abdominal, of which the caudal three pairs are small. Vasiform orifice obtusely cordate, posterior portion reticulate. Operculum transversely rectangular. Lingula short, conical, and included.

Adults: Head with a small, horn-like projection on vertex. Antennae apparently five-segmented. Fore wings with radial sector and medial veins; radial₁ and cubital veins absent or faintly indicated. Vasiform orifice pyriform. Operculum transversely rectangular. Lingula long and thin, apparently included. Claspers of male genitalia short and stout, with large, thick bases, sharply curved inward, bearing three teeth at the tips. Penis short, greatly recurved.

Genotype: *Aleuronudus induratus* Hempel, 1922.

According to Bondar (1923), in *A. induratus* the anterior compound pores are cup-shaped, possessing a central rod at the bottom of the cup, around which is a row of clear teeth, the remainder of the bottom being finely striated; the corresponding pores in *A. acapulcensis* (Sampson and Drews, 1941) have a number of thin rods instead of a central process. The smaller glands are not described in detail, but those in *A. acapulcensis* are bell-shaped and have a central process.

A. M. da Costa Lima (1936) places *Pseudaleurodicus* as a synonym of *Aleuronudus*. Bondar's drawings of *A. induratus* and *P. bahiensis* Hempel, 1923, show that there is close similarity in pupal cases; but in *bahiensis* the fore wings of the adults lack the radial₁ vein completely, while it is quite long in *induratus*. This merging of genera is doubtfully followed here.

Genus *Leonardius* Quaintance and Baker

Leonardius Quaintance and Baker, 1913, U. S. Dept. Agric., Tech. Series, Ent., 27(1): 33.

Pupal case: Moderately large in size, oval in shape. Margin entire, with several rows of papilla-like pores just behind it. Seven pairs of large wax pores on dorsum: thoracic pair and last four abdominal pairs being of an agglomerate type, and the two pairs being of a compound type. Vasiform orifice elongately cordate or

triangular, the posterior portion ending in a projection. Operculum transversely rectangular. Lingula conical and included.

Adults: Head with vertex somewhat cone-shaped, with a median, longitudinal furrow. Antennae seven-segmented. Fore wings spotted, radial₁, radial sector, and medial veins distinct; cubital vein faint. Abdominal segment bearing vasiform orifice extremely long. Vasiform orifice subcircular, almost roundly rectangular. Operculum roundly rectangular. Claspers of male genitalia long, thick, tips sharply curved inward. Penis short, about half as long as claspers, upcurved.

Genotype: *Aleurodicus lahillei* Leonardi, 1910.

Genus *Paraleyrodes* Quaintance

Paraleyrodes Quaintance, 1909, U. S. Dept. Agric., Tech. Series, Ent., 12(9) : 99.

Pupal case: Small in size, ovate in shape. Margin entire. Seven pairs of compound wax pores on dorsum: one thoracic and six abdominal pairs, the spinnerets of which are reduced and the central process split into a number of rods. Vasiform orifice roundly triangular. Operculum transversely rectangular. Lingula long, spatulate, and excluded.

Adults: Head with vertex rounded. Antennae three-segmented (males) and four-segmented (females). Fore wings hyaline or dusky, with radial sector and rudimentary medial veins, the cubital vein being at times very faintly indicated by a fold. Claspers of male genitalia short and stout, rectangular in outline. Penis bilobed, almost as long as claspers.

Genotype: *Aleurodes perseae* Quaintance, 1900.

Genus *Septaleurodicus* n. gen.

Adults: Head with vertex rounded. Antennae seven-segmented, the third being the longest. Fore wings banded, with radial sector vein only; hind wings banded. Vasiform orifice transversely elliptical. Operculum transversely rectangular, strongly indented on posterior margin. Lingula long, slender, excluded. Claspers of male genitalia stout, with two large teeth at the tips. Penis simple, upcurved. Female genitalia short and stout.

Genotype: *Septaleurodicus mexicanus* new species.

This genus is related to *Aleuronudus* Hempel, 1923, from which it differs by not having the medial vein and by having the male genitalia much longer. It is also related to *Paraleyrodes* Quain-

tance, 1909, from which it differs by having more segments in the antennae and by having no trace of the medial vein.

The genus is peculiar in having the reduced wing venation coupled with the full segmentation of the antennae.

Septaleurodicus mexicanus n. sp.

Female: Body yellowish, with brown on anterior and posterior portions of thorax; the transverse brown bands on the first three abdominal segments divided centrally, the next three, except occasionally the first, undivided; the whole area of the vasiform orifice surrounded by brown; genitalia also brown. Fore wings with a wide dusky band at the tip, a narrow band centrally, the design of which is quite constant, and a small patch basally near the bottom of the wings; the single vein is darker in the dusky areas; hind wings with a single transverse band.

Length of body 1.550 mm. Head rounded. Antennae seven-segmented, 0.495 mm. long; first segment setulose, second segment with very fine setae and six spines, third segment imbricated, with the two usual ciliate sensoria and one bent peg sensorium, fourth segment imbricated, fifth segment imbricated, with a single ciliate sensorium near the tip, sixth segment imbricated, with a single peg sensorium near the tip, seventh segment imbricated only on basal third, with one ciliate and one large bent peg sensorium, the spine at the tip as long as the segment; fourth, fifth, and sixth segments as long as the third, sixth and seventh segments nearly equal in length. Wings 1.554 mm. long, with a single vein bending sharply downward at the outer edge of the central transverse band; apex rounded. Vasiform orifice broadly and transversely elliptical; operculum transversely rectangular, indented posteriorly, with two small setae, nearly filling the orifice; lingula long and slender, excluded; area posterior to orifice prolonged slightly. Genitalia short, stout, and simple.

Male: Similar to female. Length of body 1.30 mm. Length of fore wings 1.295 mm. Antennae about same length as those of female. Vasiform orifice elliptical; operculum transversely rectangular, indented behind, with two small setae. Claspers of genitalia 0.224 mm. long, with two rows of about five setae each; tip with two large teeth, the inner more blunt, the outer longer and slenderer and with two setae; a large swelling is situated below the inner tooth. Penis enlarged basally, becoming slender apically, strongly bent upward and forward.

Pupal case: Not known.

Collected, by sweeping, from *Senecio salignus*, at Chapingo, Mexico, 25-II-1924 (one lot, M.B. 30); same locality and date (another lot, not numbered); Chapultepec Park, D. F., type locality, also swept from weeds (M.B. 62). Dr. A. Dampf collector.

Holotype (male) and allotype (female) and certain paratypes will be deposited in the collection of the Escuela Nacional de Ciencias Biologicas, Mexico, D. F.; remaining paratypes in the collection of the author.

Genus *Aleurodicus* Douglas

Aleurodicus Douglas, 1892, Ent. Mo. Mag. (2)3: 32.

Pupal case: Moderately large in size, elliptical to ovoid in shape. Margin entire. Five to seven pairs of compound pores on dorsum: none or one on thorax, and four to six abdominal; caudal pair often reduced, saucer or bell shaped, with central process; larger pores with long central process and rod-like spinnerets. Vasiform orifice cordate to subcordate. Operculum transversely rectangular. Lingula long and spatulate, excluded.

Adults: Head with rounded vertex. Antennae six- or seven-segmented. Fore wings often spotted, with radial₁, radial sector, and medial veins, with sometimes a trace of the cubital vein. Vasiform orifice elongately cordate or elongately triangular. Operculum transversely rectangular. Lingula long and thin, included. Claspers of male genitalia long, narrow, only slightly curved. Penis recurved, usually short.

Genotype: *Aleurodicus anonae* Morgan, 1892.

Genus *Nealeurodicus* Hempel

Nealeurodicus Hempel, 1923, Rev. Mus. Paulista, 13: 1134.

Pupal case: Moderately large in size, elongately oval in shape. Margin entire, but toothed behind. Seven pairs of compound pores on dorsum. Vasiform orifice elongately cordate, ending in a projection. Operculum transversely rectangular. Lingula large, spatulate, included.

Genotype: *Nealeurodicus paulistus* Hempel, 1923.

Genus *Hexaleurodicus* Bondar

Hexaleurodicus Bondar, 1923, Ind. e Obras Publ. da Bahia, Sec. Patol. Veg., p. 84.

Pupal case: Moderately large in size, ovate in shape. Margin entire; marginal area often separated from submarginal area by a line. Seven pairs of heterogeneous compound pores on dorsum:

the thoracic pair without central process but with a circle of thin rods; the first one or two abdominal pairs extremely large, with a thick central process not longer than the cup, and sometimes with quadrangular pyramids at the bottom of the cup; spinnerets reduced to a circle of pores, or long and rod-like; next pair of pores with a central process or with a row of thin rods; the three remaining pairs saucer-shaped, or bell-shaped, with a circle of thin rods or with a central process. Vasiform orifice subhemispherical or subcordate. Operculum transversely rectangular. Lingula elongately or bluntly conical.

Adults: Head with vertex rounded. Antennae apparently six segmented, with a small projection at the apical end of the sixth segment which may represent the seventh. Fore wings hyaline, with radial₁, radial sector, and medial veins; the cubital vein may be lightly marked in. Claspers of male genitalia subcircular in outline, each clasper being thick and sharply but evenly curved inward, with a large tooth or swelling in the center, and with a row of setae on the inner apical portion. Penis swollen near the base, tip sharply pointed.

Genotype: *Hexaleurodicus jaciae* Bondar, 1923.

The two species included in this genus are so different from one another that the author feels each should be placed in a separated subgenus.

Subgenus *Hexaleurodicus* s. str.

Pupal case: Moderately large in size, ovate in shape. Margin entire; marginal area separated from submarginal area by a line. Seven pairs of compound pores on dorsum: thoracic pair with a circle of thin rods; first two abdominal pairs large, with a thick central process, spinnerets reduced to a circle of pores; bottom of cup with quadrangular pyramids; following pairs of pores with a central process; the three remaining pairs saucer-shaped and with a circle of thin rods. Vasiform orifice subhemispherical. Lingula elongately conical.

Adults: Characters as given for the genus.

Type: *Hexaleurodicus (Hexaleurodicus) jaciae* Bondar, 1923.

Subgenus *Drewsia* n. subg.

Pupal case: Moderately large in size, ovate in shape. Margin entire; marginal area not separated from submarginal area by a line. Seven pairs of compound pores on dorsum: thoracic pair with a circle of thin rods; first abdominal pair large, with a thick

central process, spinnerets long and rod-like; next two pairs of pores with a circle of thin rods; remaining three pairs bell-shaped and with a central process. Vasiform orifice subcordate. Lingula bluntly conical.

Type: *Hexaleurodicus (Drewsia) ferrisi* Sampson and Drews, 1941.

Genus *Eudialeurodicus* Quaintance and Baker

Eudialeurodicus Quaintance and Baker, 1915, Ann. Ent. Soc. America, 8: 369.

Pupal case: Moderately large in size, ovate in shape. Margin entire, but incised within; submarginal area with a row of setae. Three or four compound pores on abdomen, none on thorax. Vasiform orifice transversely elliptical. Operculum transversely rectangular. Lingula broadly rounded, included.

Adults: Head with vertex rounded, frons produced beyond vertex. Antennae seven-segmented. Fore wings spotted, with radius₁, radial sector, and medius. Claspers of male genitalia sickle-like, slightly divided at the tips, with a long, curved ventral process arising from the last abdominal segment and extending beyond the claspers.

Genotype: *Eudialeurodicus bodkini* Quaintance and Baker, 1915.

Usually only one pore occurs on the anterior region of the abdomen, but two sometimes occur, in which case one pore is smaller than the other; these pores have a central process surrounded by a circle of small pores or very short rods. The other two pores are near the vasiform orifice; their structure is like that of the preceding pores.

Genus *Lecanoideus* Quaintance and Baker

Lecanoideus Quaintance and Baker, 1913, U. S. Dept. Agric., Tech. Series, Ent., 27(1): 70. (Subgenus.)

Lecanoideus Quaintance and Baker, Costa Lima, 1936, Terc. Cat. dos Insectos . . . do Brasil, p. 149. (Genus.)

Pupal case: Large in size, elongately ovate in shape. Sides of case deflexed to meet shortened ventral disc. Margin ending in a series of superimposed wax tubes; submarginal area with a band of simple pores. Five pairs of compound pores on dorsum: one thoracic and four abdominal, each with a short central process and spinnerets. Vasiform orifice transversely elliptical. Operculum more or less transversely rectangular. Lingula conical and excluded.

Adults: Head with vertex strongly indented. Antennae seven-segmented. Fore wing hyaline or banded, with radial₁, radial sector, and medial veins. Lingula thin and included. Claspers of male genitalia long, slightly upcurved in the apical quarter. Penis short, less than half the length of the claspers, curved sharply up and forward.

Genotype: *Aleurodicus (Lecanoideus) giganteus* Quaintance and Baker, 1913.

Genus *Bakerius* Bondar

Bakerius Bondar, 1923, Ind. e Obras Publ. da Bahia, Sec. Patol. Veg., p. 35.

Pupal case: Large in size, elliptical in shape. Margin entire, but with one to two rows of teeth or papillae just behind it. Three pairs of compound pores on dorsum: one on thorax and two on abdomen; central process and spinnerets present, surrounded by a row of teeth or papillae. Vasiform orifice elongately subcordate, reticulated in the posterior half. Operculum transversely rectangular. Lingula conical and included.

Adults: Head with vertex produced, rounded, not conical. Antennae seven-segmented. Fore wings spotted, with radial₁, radial sector, and medial veins distinct, cubital vein indicated. Vasiform orifice transversely elliptical. Operculum transversely rectangular. Claspers of male genitalia long and straight.

Genotype: *Bakerius phrygilanthi* Bondar, 1923.

Genus *Octaleurodicus* Hempel

Octaleurodicus Hempel, 1922, Not. Prelim. Rev. Mus. Paulista, 2: 7.

Quaintancius Bondar, 1923, Ind. e Obras Publ. da Bahia, Sec. Patol. Veg., p. 27.

Octaleurodicus Hempel, Costa Lima, 1928, Suppl. Mem. Inst. Oswaldo Cruz, 4: 137. (Synonymy.)

Pupal case: Large in size, oval in shape. Margin entire, but with a row of broad teeth or spatulate wax pores just behind it. Four pairs of compound wax pores on dorsum: all located very near the central ridge, the center of the pores being dusky with a dentate margin. Vasiform orifice cordate. Operculum transversely rectangular. Lingula bluntly conical, included.

Adults: Head with conical vertex. Antennae seven-segmented. Fore wings spotted, with radial₁, radial sector, and medial veins dis-

tinct, the cubital vein being a strong line. Vasiform orifice transversely elliptical. Lingula broad and rounded.

Genotype: *Octaleurodicus nitidus* Hempel, 1922.

A. M. da Costa Lima (1936) stated that Bondar had informed him *Octaleurodicus* must be considered, in part, as *Aleuronudus* Hempel. Upon what this conclusion was based was not stated. Bondar (1923) stated that the head of *Quaintancius rubus* (= *O. nitidus*) was triangular, that is, with a conical vertex. Hempel (1923) stated that the vertex was prominent, with the anterior margin truncate and slightly indented in the center.

Neither the characters of the pupal cases nor the adults approach those given for *Aleuronudus*. The adults described by Hempel may belong to entirely different genera. The synonymy indicated above is not recognized here.

Genus *Metaleurodicus* Quaintance and Baker

Metaleurodicus Quaintance and Baker, 1913, U. S. Dept. Agric., Tech. Series, Ent., 27(1): 73. (Subgenus.)

Metaleurodicus Quaintance and Baker, Bondar, 1923, Ind. e Obras Publ. da Bahia, Sec. Patol. Veg., p. 81. (Genus.)

Pupal case: Variable in size, oval in shape. Margin entire. Five or six pairs of compound pores on dorsum: one thoracic and four or five abdominal, the spinnerets of which are reduced and the central process usually not longer than the sides of the cup; some of the pores have a circle of thin rods instead of the central rod. Vasiform orifice subcordate. Operculum transversely rectangular. Lingula conical, usually included.

Adults: Head with rounded vertex. Antennae seven-segmented. Fore wings hyaline, with radial₁, radial sector, and medial veins distinct, the cubital vein being indicated at times. Claspers of male genitalia short and thick. Penis longer than half claspers, sharply upcurved.

Genotype: *Aleurodicus minima* Quaintance, 1900.

Subfamily ALEYRODINAE Enderlein

Aleyrodinae Enderlein, 1909, Zool. Anz., 34: 231.

Pupal case: Typically thick, small in size, pyriform or elongate to subcircular in shape. Margin of case entire or with one or two rows of teeth. Thoracic tracheal folds and pores often present, anal fold or furrow often present. Simple pores only present. Prominent setae and papillae often present. Vasiform orifice varying in shape from subcircular to elongately triangular. Operculum

varying in shape from transversely rectangular to subcircular, often filling the orifice. Lingula usually small and included, simple or knobbed, with no or two setae.

Adults: Small in size. Head with vertex rounded. Antennae seven-segmented, the third segment usually the longest, occasionally the second, fourth, or the seventh the longest. Fore wings hyaline, spotted, dusky, or completely black; with radial₁ (rarely), radial sector (always), and cubital (nearly always) veins. Paronychium of tarsi blade-like. Vasiform orifice subcircular or transversely elliptical. Operculum transversely rectangular. Lingula long and pointed, excluded.

KEY TO GENERA OF THE ALEYRODINAE

(Pupal cases)

1. Lingula extremely short, hardly longer than wide; adults with radial sector vein only in fore wing (Neomaskellini) *Neomaskellia*
Lingula elongate, much longer than wide 2
2. Dorsum completely covered with simple pores; adults with radial₁, radial sector, and cubital veins in fore wing (Aleurochitonini) *Aleurochiton*
Dorsum with relatively few simple pores; adults with radial sector and cubital veins in fore wing 3
3. Dorsum with elongate, siphon-like wax tubes; adults lacking tarsal paronychium (Siphoninini) *Siphoninus*
Dorsum without siphon-like wax tubes; adults with tarsal paronychium 4
4. Thoracic tracheal folds and combs or pores, or pores and combs only, and anal fold present (Dialeurodini) 5
Thoracic tracheal folds and combs or pores and anal fold absent (Aleyrodini) 36
5. Anal fold present 6
Anal fold absent 26
6. Dorsal disc separated from submarginal area by a distinct line or fold 7
Dorsal disc not separated from submarginal area 13
7. Tracheal folds distinctly visible 8
Tracheal folds indistinct or pores and combs only visible 9
8. Thoracic tracheal folds ending in a pore *Asialeyrodes*
Thoracic tracheal folds ending in a comb of teeth *Paraleurolobus*

9. Usual marginal ending of tracheal fold forming a pore 10
 Usual marginal ending of tracheal fold forming a comb of
 teeth 11
10. Dorsum with blunt tubercles, dorsal disc not defined
Aleurotuberculatus
 Dorsum without tubercles, dorsal disc defined
Malayaleyrodes
11. Vasiform orifice cordate, not surrounded by a trilobed figure,
 lingula knobbed and exposed *Pseudaleurolobus*
 Vasiform orifice subcordate, often surrounded by a trilobed
 figure 12
12. Margin entire *Africaleurodes*
 Margin toothed *Aleurolobus*
13. Many lines encircling case *Acanthaleyrodes*
 Case without encircling lines 14
14. Thoracic tracheal folds ending in a pore, or only a pore
 present 15
 Thoracic tracheal fold ending in a comb of teeth, or only a comb
 present 16
15. Case with a ring of large submarginal pores *Dialeuropora*
 Case without a ring of large submarginal pores *Dialeurodes*
16. Thoracic tracheal folds arising from large glands
Aleuroglandulus
 Thoracic tracheal folds arising free 17
17. Operculum semi-lunar, filling less than half of the orifice
Pseudaleyrodes
 Operculum otherwise shaped, filling at least half of orifice ... 18
18. Submargin with a series of papilla-like pores 19
 Submargin without papilla-like pores 20
19. Dorsum with numerous, large irregular pores, operculum sub-
 cordate *Aleuroparadoxus*
 Dorsum without large irregular pores, operculum transversely
 rectangular *Stenaleyrodes*
20. Submarginal area with a row of prominent spines 21
 Submarginal area without prominent spines 24
21. Abdominal ridge with prominent papillae *Mixaleyrodes*
 Abdominal ridge without papillae 23
23. Vasiform orifice broadly cordate, projecting posteriorly
Xenaleyrodes
 Vasiform orifice roundly trapezoidal, not projecting posteriorly
Corbettella

24.	Vasiform orifice pointed posteriorly, lingula exposed	25
	Vasiform orifice rounded posteriorly, lingula hidden	
	<i>Aleuroplatus</i>	
25.	A series of wart-like structures outlining the developing insect	
	<i>Asterobemisia</i>	
	The wart-like structures lacking	<i>Asterochiton</i>
26.	Submarginal area with a series of papilla-like pores	
	<i>Trialeurodes</i>	
	Submarginal area without papilla-like pores	27
27.	Vasiform orifice triangular, operculum not filling most of it	28
	Vasiform orifice rounded, operculum filling most of it	30
28.	Operculum trapezoidal	29
	Operculum rounded	<i>Bemisia</i>
29.	Submarginal area with many short setae	<i>Acanthobemisia</i>
	Submarginal area without setae	<i>Metaleyrodes</i>
30.	Dorsal disc with chitinized tubercles	<i>Tuberaleyrodes</i>
	Dorsal disc without chitinized tubercles	31
31.	Margin smooth	<i>Aleuroporosus</i>
	Margin crenulate or toothed	32
32.	Vasiform orifice situated in a ribbed or reticulated pit	33
	Vasiform orifice not situated in a pit	34
33.	Operculum rounded	<i>Setaleyrodes</i>
	Operculum transversely subrectangular	<i>Pealius</i>
34.	Dorsum covered with raised circular papillae	<i>Singhiella</i>
	Dorsum without circular papillae	35
35.	Venter of case with a distinct rim, dorsum with four segmented setae	<i>Taiwanaleyrodes</i>
	Venter of case plain, dorsum with round patches with suture-like markings	<i>Aleuroclava</i>
36.	Dorsal disc separated from submarginal area by a line or fold	37
	Dorsal disc not separated from submarginal area by a line or fold	41
37.	Margin smooth or with one row of teeth	38
	Margin with two rows of teeth	<i>Hempelia</i>
38.	Submarginal area elevated, with papilla-like folds	
	<i>Aleuromigda</i>	
	Submarginal area not elevated, without papilla-like folds	39
39.	Vasiform orifice transversely elliptical	<i>Hesperaleyrodes</i>
	Vasiform orifice cordate or subcordate	40

40. Operculum subcordate, vasiform orifice elevated	
	<i>Tetraleurodes</i>
Operculum transversely rectangular, vasiform orifice not elevated	<i>Aleuroputeus</i>
41. Dorsum with a large number of mammiform papillae	
	<i>Aleurotithius</i>
Dorsum without mammiform papillae	42
42. Margin smooth or slightly irregular, not regularly toothed	43
Margin regularly toothed	44
43. Vasiform orifice elevated, operculum filling orifice	
	<i>Neoleurodes</i>
Vasiform orifice not elevated, operculum not filling orifice	<i>Aleyrodes</i>
44. Margin with one row of teeth	45
Margin with two rows of teeth	52
45. Sides of case deflexed to meet shortened ventral disc	
	<i>Tetralicia</i>
Sides of case not deflexed	46
46. Dorsal disc separated from submarginal area by a series of pores	47
Dorsal disc not separated from submarginal area	48
47. Submarginal area with prominent setae, operculum subcordate	
	<i>Corbettia</i>
Submarginal area without prominent setae, operculum roundly semi-lunar	<i>Bulgarialeurodes</i>
48. Vasiform orifice elevated, dorsum with many prominent setae	
	<i>Aleurocanthus</i>
Vasiform orifice not elevated, dorsum without prominent setae	49
49. Vasiform orifice subcordate	50
Vasiform orifice subcircular	51
50. Body elliptical, operculum subcordate	<i>Aleurotulus</i>
Body narrowly elongate, operculum trapezoidal	<i>Aleurocybotus</i>
51. Body pyriform, operculum subcircular	<i>Nealeyrodes</i>
Body elliptical, operculum trapezoidal	<i>Mexicaleyrodes</i>
52. Vasiform orifice elevated	53
Vasiform orifice not elevated	55
53. Posterior edge of vasiform orifice prolonged into a bifid horn	
	<i>Aleurocerus</i>
Posterior edge of orifice not prolonged into a horn	54

54. Small, plain circular pores on dorsum *Zaphanera*
 Small compound-like pores on dorsum *Laingiella*
55. Vasiform orifice roundly rectangular or transversely elliptical 56
 Vasiform orifice cordate or subcordate 57
56. Vasiform orifice roundly rectangular, situated on an oval area with a posterior projection *Luederwaldtiana*
 Vasiform orifice transversely elliptical, not situated on an oval area *Aleurothrixus*
57. Vasiform orifice cordate, operculum filling half of the orifice *Aleuromarginatus*
 Vasiform orifice subcordate, filling more than half of the orifice 58
58. Submarginal area with a row of setae, dorsum without a prominent ridge *Pentaleyrodes*
 Submarginal area without a row of setae, dorsum with a prominent ridge *Aleurotrachelus*

Genus *Neomaskellia* Quaintance and Baker

Neomaskellia Quaintance and Baker, 1913, U. S. Dept. Agric., Tech. Series, Ent., 27(1) : 91.

Pupal case: Moderately large in size, elongately ovate in shape. Sides of case deflexed to meet shortened ventral disc. Margin crenulate or irregularly toothed; submarginal area with a row of long setae. Dorsum without papilla or pores. Vasiform orifice elevated, transversely elliptical. Operculum more or less transversely rectangular, not filling more than half of orifice. Lingula very short, hardly longer than wide, exposed, included.

Adults: Head with vertex depressed mesad and lateral margins elevated. Antennae of usual seven segments, short, thick, hairy; second segment globular. Fore wings mottled, with radial sector vein (males) and a trace of the cubital vein (females). Vasiform orifice transversely subelliptical. Operculum transversely rectangular, covered with fine setae. Lingula longitudinally rectangular, with fine setae, excluded. Claspers of male genitalia short, thick, hairy; each clasper conical in outline. Penis simple, nearly as long as claspers, upcurved.

Genotype: *Aleurodes comata* Maskell, 1895.

Genus *Aleurochiton* Tullgren

Aleurochiton Tullgren, 1907, Ark. f. Zool., 3: 14.

Pupal case: Medium in size, elliptical to ovate in shape. Margin crenulate to toothed. Many thick-walled, granulated, simple pores

on dorsum. Vasiform orifice longitudinally subrectangular or subcordate. Lingula spatulate, with no or two setae.

Adults: Head with rounded vertex. Fore wings with radial₁, radial sector, and cubital veins. Vasiform orifice subcircular. Operculum transversely rectangular, rounded. Lingula simple and thick, excluded. Claspers of male genitalia curved at tip, with or without setae. Penis enlarged basally, longer than half the length of claspers, upcurved. Female genitalia thick and hairy, enlarged basally. Paronychium of tarsi large and hairy, spatulate or blade-like, longer than claws.

Genotype: *Chermes aceris ovatus* Geoffroy, 1764.

There is enough variation in the species included in this genus to warrant the formation of two subgenera.

Subgenus *Aleurochiton* s. str.

Pupal case: Medium in size, oval in shape. Margin crenulate. Many simple pores on dorsum. Vasiform orifice longitudinally rectangular. Lingula without setae.

Adults: Characters for the genus, except for the following: Claspers of male with setae. Paronychium of tarsi spatulate.

Type: *Aleurochiton (Aleurochiton) aceris* (Geoffroy, 1764).

Subgenus *Nealeurochiton* n. subg.

Pupal case: Medium in size, elliptical to ovate in shape. Margin crenulate or toothed. Vasiform orifice cordate. Lingula with two setae.

Adults: Characters for the genus, except for the following: Claspers of male without setae. Paronychium of tarsi blade-like.

Type: *Aleurochiton (Nealeurochiton) forbesii* (Ashmead, 1893).

Genus *Siphoninus* Silvestri

Siphoninus Silvestri, 1915, Boll. Lab. Zool. Portici, 9: 245.

Pupal case: Medium in size, elliptical in shape. Margin crenulate; submarginal area with a row of setae. Elongate wax tubes on dorsum. Vasiform orifice subcircular to broadly cordate. Operculum transversely rectangular. Lingula expanded at tip, included.

Adults: Paronychium of tarsi absent. Vasiform orifice subcircular. Operculum subrectangular. Lingula long and thin, enlarged basally, excluded. Claspers of male genitalia with one or two teeth at the tip, about four rows of setae present and several

long ones at the apices. Penis simple, longer than half the length of the claspers. Female genitalia stout and simple.

Genotype: *Siphoninus finitimus* Silvestri, 1915.

Genus *Asialeyrodes* Corbett

Asialeyrodes Corbett, 1935, Jour. Mus. Fed. Malay States, 17: 841.

Pupal case: Medium in size, broadly elliptical in shape. Margin entire; marginal area separated from submarginal area by a narrow line; submarginal area separated from dorsal disc by a suture-like line. Thoracic tracheal and caudal folds and pores present. Dorsum without conspicuous pores or papillae. Vasiform orifice small, subcordate. Operculum subcordate. Lingula hidden.

Genotype: *Asialeyrodes lumpurensis* Corbett.

Genus *Paraleurolobus* Sampson and Drews

Paraleurolobus Sampson and Drews, 1941, An. Esc. Nac. de Cien. Biol., 2: 168.

Pupal case: Medium in size, broadly ovate in shape. Margin with one row of teeth; submarginal area separated from dorsal disc by a distinct line. Thoracic tracheal and caudal folds present, ending in a comb of teeth. Dorsal disc distinctly elevated and imbricated. Vasiform orifice roundly trapezoidal or truncate. Operculum roundly trapezoidal or truncate. Lingula hidden.

Genotype: *Paraleurolobus imbricatus* Sampson and Drews, 1941.

Genus *Aleurotuberculatus* Takahashi

Aleurotuberculatus Takahashi, 1932, Report, Dept. of Agric., Formosa, 59: 20.

Pupal case: Moderate to small in size, variable in shape, but generally ovate. Margin crenulate; submarginal area separated from dorsal disc by a more or less distinct line, with a row of papillae of various kinds or spine-like structures. Thoracic tracheal folds only faintly discernible, pores distinct, but at times indistinct; anal fold and pore distinct. Dorsum with fine granules or papillae. Vasiform orifice subcordate, notched at posterior margin. Operculum subcordate, nearly filling orifice. Lingula hidden.

Genotype: *Aleurotuberculatus gordoniae* Takahashi, 1932.

Genus *Malayaleyrodes* Corbett

Malayaleyrodes Corbett, 1935, Jour. Mus. Fed. Malay States, 17: 834.

Pupal case: Medium in size, subovate to elliptical in shape. Margin entire; submarginal area separated from dorsal disc. Thoracic tracheal folds not discernible, tracheal pores small and rounded; caudal fold and pore present. Dorsal disc defined by tooth-like projections. Vasiform orifice subcordate, notched at posterior end. Operculum subcordate. Lingula hidden.

Genotype: *Malayaleyrodes lumpurensis* Corbett, 1935.

Genus *Pseudaleurolobus* Hempel

Pseudaleurolobus Hempel, 1923, Rev. Mus. Paulista, 13: 1141.

Pupal case: Large in size, subcircular to broadly ovate in shape. Margin irregularly crenulate; submarginal area separated from dorsal disc by a groove. Thoracic tracheal folds indicated, teeth distinct; caudal fold and pore distinct. Vasiform orifice large, cordate. Operculum cordate. Lingula long and narrow, the tip expanded, exposed and included.

Genotype: *Pseudaleurolobus jaboticabae* Hempel, 1923.

What is considered here to be a nearly closed comb of teeth may be considered by others to be a pore. In the original description, it was stated that the indistinct tracheal folds ended in a not entirely closed circular area with teeth in the center.

Genus *Africaleurodes* Dozier

Africaleurodes Dozier, 1934, Ann. Mag. Nat. Hist., (10) 14: 187.

Pupal case: Medium in size, subcircular to broadly elliptical in shape. Margin entire; submarginal area separated from dorsal disc by a distinct suture-like line; marginal area separated from submarginal area by a faint line. Thoracic tracheal folds indistinct, ending in a few teeth; anal fold ending in a comb of indistinct teeth. Vasiform orifice subcordate, surrounded by a trilobed figure forming the anal fold caudally. Operculum subcordate, filling half of orifice. Lingula long, slightly exposed, included.

Genotype: *Africaleurodes coffeacola* Dozier, 1934.

Genus *Aleurolobus* Quaintance and Baker

Aleurolobus Quaintance and Baker, 1914, U. S. Dept. Agric., Tech. Series, Ent., 27(2): 108.

Pupal case: Medium in size, subelliptical to oval in shape. Margin with one row of teeth; submarginal area separated from dorsal disc by a line, much fluted by suture-like lines. Marginal area often separated from submarginal area by a faint line. Thoracic

tracheal folds evident, indistinct, or wanting, the ending being a few specialized teeth; anal fold ending in a few teeth. Vasiform orifice subcordate, usually surrounded by a definite trilobed figure forming the anal fold caudally. Operculum subcordate. Lingula hidden.

Adults: Seventh segment of male often as long or longer than other segments together. Fore wings with a single flexure in the radial sector vein. Vasiform orifice subcircular. Operculum transversely rectangular. Lingula short, slightly expanded at the tip, included. Claspers of male genitalia strongly curved inward at tips, with a few setae. Penis simple, slightly enlarged basally, slightly upcurved.

Genotype: *Aleurodes marlatti* Quaintance, 1903.

It is quite possible that *Africaleurodes* Dozier is a synonym of *Aleurolobus*. The only apparent differences between the two are in the margin and operculum.

Genus *Acanthaleyrodes* Takahashi

Acanthaleyrodes Takahashi, 1931, Jour. Soc. Trop. Agric., 3: 20.

Pupal case: Medium in size, oval in shape. Margin faintly crenulate; submarginal area not separated from dorsal disc, but with many fine lines encircling the case. Thoracic tracheal folds faintly indicated, not forming a distinct pore at the marginal end; anal fold distinct. Vasiform orifice elevated, subhemispherical. Operculum subquadrate, nearly filling orifice. Lingula slightly exposed, slightly expanded at the tip, included.

Genotype: *Acanthaleyrodes calicarpae* Takahashi, 1931.

Genus *Dialeuropora* Quaintance and Baker

Dialeuropora Quaintance and Baker, 1917, Proc. U. S. Nat. Mus., 51: 434. (Subgenus.)

Dialeuropora Quaintance and Baker, Takahashi, 1934, Report, Dept. of Agric., Formosa, 63: 46. (Genus.)

Pupal case: Medium in size, elliptical in shape. Margin with a single row of crenulate teeth; submarginal area with a ring of large simple pores. Thoracic tracheal folds and pores, and anal fold and pore present. Vasiform orifice subcordate. Operculum subcordate, nearly filling orifice. Lingula hidden.

Adults: Fore wings banded. Vasiform orifice transversely elliptical. Operculum subquadrate. Lingula long and thin, ex-

cluded. Claspers of male genitalia with three teeth at the tips. Penis simple, slightly upcurved.

Genotype: *Dialeurodes (Dialeuropora) decempuncta* Quaintance and Baker, 1917.

Genus *Dialeurodes* Cockerell

Dialeurodes Cockerell, 1902, Proc. Acad. Nat. Sci. Philadelphia, 54: 283. (Subgenus.)

Dialeurodes Cockerell, Quaintance and Baker, 1914, U. S. Dept. Agric., Tech. Series, Ent., 27(2): 97. (Genus.)

Pupal case: Variable in size, elliptical to subcircular in shape. Margin with one row of rounded teeth; submarginal area not separated from dorsal disc. Thoracic tracheal folds and pores evident; anal fold and pore evident. Dorsal ridge often evident. Vasiform orifice small, transversely oval or subcircular. Operculum large, variable in shape, filling most of orifice. Lingula hidden.

Adults: Fore wings hyaline or completely dusky. Vasiform orifice transversely elliptical. Operculum transversely rectangular for the most part. Lingula long and thin, excluded. Claspers of male genitalia with two teeth at the tips, and one further back. Penis longer than half the length of the claspers.

Genotype: *Aleyrodes citri* Riley and Howard, 1893.

Subgeneric names: *Dialeurodes* Cockerell, 1902; *Dialeuroloonga* Dozier, 1928; *Dialeuronomada* Quaintance and Baker, 1917; *Dialeuroplata* Quaintance and Baker, 1917; *Gigaleurodes* Quaintance and Baker, 1917; *Rabdostigma* Quaintance and Baker, 1917; *Rhachisphora* Quaintance and Baker, 1917; *Rusostigma* Quaintance and Baker, 1917; *Singhius* Takahashi, 1932.

Genus *Aleuroglandulus* Bondar

Aleuroglandulus Bondar, 1923, Ind. e Obras Publ. da Bahia, Sec. Patol. Veg., p. 121.

Pupal case: Moderately large in size, ovate in shape. Margin entire; submarginal area not separated from dorsal disc. Thoracic tracheal folds prominent, ending in a comb of teeth, arising from large, circular, gland-like areas; anal fold and comb of teeth present. Vasiform orifice elongately cordate, with longitudinal lines. Operculum semi-circular, filling less than half of orifice. Lingula exposed, knobbed and lobed, included.

Adults: Fore wings with radial sector vein comparatively straight.

Genotype: *Aleuroglandulus subtilis* Bondar, 1923.

Genus *Pseudaleyrodes* Hempel

Pseudaleyrodes Hempel, 1923, Rev. Mus. Paulista, 13: 1141.

Pupal case: Moderately large in size, oval to subcircular in shape. Margin with a row of fine teeth; submarginal area not separated from dorsal disc. Thoracic tracheal folds absent; tracheal combs formed by oval toothed plates within the margin; anal comb present. Vasiform orifice obtusely cordate. Operculum semi-lunar, filling less than the orifice. Lingula small, the tip slightly swollen, included.

Genotype: *Pseudaleyrodes depressus* Hempel, 1923.

Genus *Aleuoparadoxus* Quaintance and Baker

Aleuoparadoxus Quaintance and Baker, 1914, U. S. Dept. of Agric., Tech. Series, Ent., 27(2): 104.

Pupal case: Medium in size, elliptical in shape. Margin with a single row of teeth; submarginal area not separated from dorsal disc. Thoracic tracheal folds indicated, ending in a comb of teeth; caudal fold and teeth faintly indicated. Dorsum with numerous large, irregular pores. Vasiform orifice subcordate or triangular. Operculum subcordate or triangular. Lingula hidden.

Adults: Fourth segment of antennae the longest.

Genotype: *Aleyrodes iridescens* Bemis, 1904.

Genus *Stenaleyrodes* Takahashi

Stenaleyrodes Takahashi, 1938, Trans. Nat. Hist. Soc. Formosa, 28: 269.

Pupal case: Small in size, elongately elliptical in shape. Margin crenulate, widely sclerotized, with a line of small, pale, elongate areas near the proximal margin; submarginal area not separated from dorsal disc, with groups of papillae near the margin. Thoracic tracheal folds absent, combs distinct; caudal fold and comb absent. Vasiform orifice elongately triangular. Operculum transversely rectangular. Lingula long, exposed, included.

Genotype: *Stenaleyrodes vinsoni* Takahashi, 1938.

Genus *Mixaleyrodes* Takahashi

Mixaleyrodes Takahashi, 1936, Kontyu, 10: 150.

Pupal case: Medium in size, elliptical in shape. Margin with one row of wide teeth; submarginal area not separated from dorsal disc. Thoracic tracheal folds not present, but combs present; caudal fold and comb absent. Abdominal ridge with a longitudinal

row of prominent papillae. Vasiform orifice subcordate, elevated. Operculum cordate. Lingula hidden.

Genotype: *Mixaleyrodes polystichi* Takahashi, 1936.

Genus *Xenaleyrodes* Takahashi

Xenaleyrodes Takahashi, 1936, *Tenthredo*, 1: 113.

Pupal case: Medium in size, elliptical in shape. Margin minutely toothed; submarginal area separated from dorsal disc only along anterior portion of cephalo-thorax. Thoracic tracheal folds absent, combs distinct. Dorsum with a row of prominent setae. Vasiform orifice broadly cordate, slightly elevated, with a pointed process on the posterior edge. Operculum subcordate, filling most of orifice. Lingula hidden.

Genotype: *Xenaleyrodes artocarp*i Takahashi, 1936.

Genus *Corbettella* n. gen.

Pupal case: Medium in size, elliptical in shape. Margin entire, with a thickened rim; submarginal area not separated from dorsal disc, bearing a row of prominent setae. Thoracic tracheal folds absent, the combs being represented by a single prominent tooth in each; caudal fold distinct, ending in a comb of inconspicuous teeth. Dorsum with a number of pairs of pits in the central portion. Vasiform orifice roundly trapezoidal. Operculum roundly trapezoidal. Lingula rounded at the tip, exposed, included or excluded.

Genotype: *Bemisia artocarp*i Corbett, 1935.

This genus differs essentially from *Bemisia* Quaintance and Baker by having the single toothed tracheal combs, by having the vasiform orifice and operculum roundly trapezoidal.

Genus *Aleuroplatus* Quaintance and Baker

Aleuroplatus Quaintance and Baker, U. S. Dept. Agric., Tech. Series, Ent., 27(2): 98.

Pupal case: Medium in size, elliptical, oval, or subcircular in shape. Margin with a single row of teeth; submarginal area not separated from dorsal disc. Thoracic tracheal folds usually visible, ending in a comb of teeth; caudal comb sometimes present. Dorsum with a number of small pores. Vasiform orifice small, transversely elliptical, rounded, or roundly quadrangular. Operculum rounded, filling a third to all of orifice. Lingula hidden.

Adults: Claspers of male genitalia considerably curved at the distal end, with several teeth and prominent setae.

Genotype: *Aleurodes quercus-aquaticae* Quaintance, 1900.

Subgeneric names: *Aleuroplatus* Quaintance and Baker, 1917; *Massilieuroides* Goux, 1939; *Orchamus* Quaintance and Baker, 1917.

Genus *Asterobemisia* Trehan

Asterobemisia Trehan, 1940, Trans. R. Ent. Soc. London, 90: 591.

Pupal case: Medium in size, elliptical in shape. Margin crenulate; submarginal area separated from dorsal disc by a series of wart-like structures outlining the developing insect. Thoracic tracheal folds and combs present; caudal fold and comb present. Vasiform orifice elongately triangular. Operculum semi-circular. Lingula stout, spatulate, exposed, included.

Adults: Vasiform orifice transversely subelliptical. Operculum transversely rectangular. Lingula short and thick, included. Claspers of male genitalia with a long sharply curved tooth at the tips and a few setae, with a lobe beneath the tooth. Penis almost straight, longer than half the length of the claspers.

Genotype: *Aleyrodes carpini* Koch, 1857.

Genus *Asterochiton* Maskell

Asterochiton Maskell, 1878, Trans. New Zealand Inst., 11: 214.

Dialeurodoides Quaintance and Baker, U. S. Dept. Agric., Tech. Series, Ent., 27(2): 98.

Asterochiton Maskell, Quaintance and Baker, 1915, U. S. Dept. of Agric., Tech. Series, Ent., 27: Contents and Index, p. XI.

Pupal case: Medium in size, subelliptical to subcircular in shape. Margin with one row of teeth; submarginal area not separated from dorsal disc. Thoracic tracheal folds and combs present; caudal fold may be indicated, comb present. Vasiform orifice subcordate, pointed posteriorly. Operculum transversely subrectangular, filling about half of orifice. Lingula expanded at tip, tip acute, exposed, included.

Genotype: *Asterochiton aureus* Maskell, 1878.

Genus *Trialeurodes* Cockerell

Trialeurodes Cockerell, 1902, Proc. Acad. Nat. Sci. Philadelphia, 54: 283. (Subgenus.)

Asterochiton Maskell, Quaintance and Baker, 1914, U. S. Dept. Agric., Tech. Series, Ent., 27(2): 104.

Trialeurodes Cockerell, Quaintance and Baker, 1915, U. S. Dept. of Agric., Tech. Series, Ent., Contents and Index, p. XI.

Gymnaleurodes Sampson and Drews, 1940, Pan-Pac. Entomologist, 16: 29.

Pupal case: Medium to small in size, elliptical in shape. Margin with one row of teeth; submarginal area not separated from dorsal disc, with a row or a large number of papilla-like pores; sides of case occasionally slightly deflexed. Thoracic tracheal folds rarely indicated, pores or combs not present; anal fold usually present, comb of teeth occasionally present. Dorsum often considerably elevated from venter. Vasiform orifice subcordate, usually notched on caudal end. Operculum transversely elliptical, filling about half of orifice. Lingula spatulate, lobed, exposed, included.

Adults: Fore wing usually with one flexure in radial sector. Vasiform orifice subcircular to elliptical. Operculum transversely rectangular. Lingula stout, excluded.

Genotype: *Aleyrodes pergandei* Quaintance, 1900.

Genus *Bemisia* Quaintance and Baker

Bemisia Quaintance and Baker, 1914, U. S. Dept. of Agric., Tech. Series, Ent., 27(2): 99.

Pupal case: Variable in size, elliptical or oval in shape. Margin irregularly toothed; submarginal area not separated from dorsal disc. Thoracic tracheal folds and pores sometimes indicated; anal fold distinctly present. Vasiform orifice elongately triangular. Operculum subcordate to transversely elliptical, filling not more than two-thirds of the orifice. Lingula spatulate, exposed, included.

Adults: Antennae in some males with the seventh segment the longest. Vasiform orifice transversely subelliptical. Operculum transversely rectangular. Lingula long and thin, excluded. Claspers of male genitalia stout, with several rows of setae. Penis longer than half the length of claspers, slightly upcurved.

Genotype: *Aleurodes inconspicua* Quaintance, 1900.

Genus *Acanthobemisia* Takahashi

Acanthobemisia Takahashi, 1935, Kontyu, 19: 25.

Pupal case: Small in size, elliptical in shape. Margin with one row of teeth; submarginal area not separated from dorsal disc, but with many short setae. Thoracic tracheal folds and pores absent; caudal fold indicated. Vasiform orifice elongate, nearly triangu-

lar. Operculum roundly trapezoidal. Lingula pointed, exposed, included.

Genotype: *Acanthobemisia distylii* Takahashi, 1935.

Genus *Metaleyrodes* n. gen.

Pupal case: Medium in size, subcircular or broadly elliptical in shape. Margin with one row of small rounded teeth; submarginal area not separated from dorsal disc. Thoracic tracheal folds and pores absent; anal fold distinct, ending in a pore-like indentation. Vasiform orifice triangular, sculptured or toothed. Operculum trapezoidal, filling less than half of the orifice. Lingula knobbed, exposed, included. Venter with dots.

Genotype: *Aleyrodes oceanica* Takahashi, 1939.

This genus is related to *Aleyrodes* Latreille, from which it differs by having the triangular vasiform orifice, by having the distinct caudal fold, and by having the trapezoidal operculum.

Genus *Tuberaleyrodes* Takahashi

Tuberaleyrodes Takahashi, 1932, Report, Dept. of Agric., Formosa, 59: 29.

Pupal case: Medium in size, elliptical in shape. Margin with one row of small teeth; submarginal area not separated from dorsal disc. Thoracic tracheal folds and pores absent; caudal fold distinct. Dorsum with chitinized tubercles, each of which possesses a seta. Vasiform orifice subcordate, notched at the posterior margin. Operculum subcordate, filling most of orifice. Lingula barely exposed, included.

Genotype: *Tuberaleyrodes machili* Takahashi, 1932.

Genus *Aleuoporosus* Corbett

Aleuoporosus Corbett, 1935, Jour. Mus. Fed. Malay States, 17: 844.

Pupal case: Medium in size, elliptical in shape. Margin entire; submarginal area not separated from dorsal disc. Thoracic tracheal folds and pores absent; caudal fold and pore present. Abdominal segments with tubercle-like structures and with an interrupted fold submedially, imparting the appearance of a central ridge. Vasiform orifice subcordate, the posterior margin recessed. Operculum subcordate, filling orifice. Lingula hidden.

Genotype: *Aleuoporosus lumpurensis* Corbett, 1935.

Genus *Setaleyrodes* Takahashi

Setaleyrodes Takahashi, 1931, Soc. Trop. Agric., 3: 21.

Pupal case: Medium in size, elongate in shape. Margin with one row of teeth; submarginal area not separated from dorsal disc, with long setae. Thoracic tracheal folds and pores absent; caudal fold distinct. Vasiform orifice subquadrate, situated in a reticulated, pyriform pit. Operculum rounded, filling about half of orifice. Lingula slightly knobbed, exposed, included.

Genotype: *Setaleyrodes mirabilis* Takahashi, 1931.

Genus *Pealius* Quaintance and Baker

Pealius Quaintance and Baker, 1914, U. S. Dept. of Agric., Tech. Series, Ent., 27(2): 99.

Pupal case: Medium in size, elliptical in shape. Margin with one row of teeth; submarginal area not separated from dorsal disc. Thoracic tracheal folds absent, combs, if present, very faintly indicated; caudal fold distinct. Vasiform orifice subrectangular, situated in a ribbed, pyriform pit. Operculum subrectangular, filling about half of orifice. Lingula knobbed, exposed, included.

Adults: Vasiform orifice transversely elliptical. Operculum transversely rectangular. Claspers of male genitalia small, with a long, slender tooth at the tips, a very large, broad tooth behind, with a few setae. Penis nearly as long as claspers, sharply upcurved.

Genotype: *Aleyrodes maskelli* Bemis, 1904.

Genus *Singhiella* n. gen.

Pupal case: Large in size, elliptical in shape. Margin with one row of teeth; submarginal area not separated from dorsal disc, with a row of spines. Thoracic tracheal folds and pores absent; caudal fold distinct. Dorsum covered with circular, raised papilla-like pores. Vasiform orifice subsemicircular. Operculum subsemicircular. Lingula hidden.

Adults: Wings spotted. Antennae seven-segmented. Vasiform subelliptical. Operculum transversely rectangular. Lingula triangular, broad at base, excluded. Claspers of male genitalia short and stout, almost square in outline, pointed at the tips, with a large tooth beneath each tip. Penis longer than half the length of claspers, terminating in a crook, upcurved.

Genotype: *Trialeurodes bicolor* Singh, 1931.

Genus *Taiwanaleyrodes* Takahashi

Taiwanaleyrodes Takahashi, 1932, Report, Dept. of Agric., 59: 28.

Pupal case: Medium in size, ovate in shape. Margin with a row of small teeth; marginal area bent downward; submarginal area not separated from dorsal disc. Thoracic tracheal folds and pores absent; caudal fold and pore distinct. Dorsum often with small granules or papillae, with two long, two-segmented setae on the cephalo-thorax and two on the abdomen. Venter with a distinct marginal rim. Vasiform orifice cordate to subcordate, notched on posterior margin. Operculum cordate to subcordate, nearly filling orifice. Lingula thin, knobbed, included, usually hidden by operculum.

Genotype: *Tainwanaleyrodes meliosomae* Takahashi, 1932.

Genus *Aleuroclava* Singh

Aleuroclava Singh, 1931, Mem. Dept. Agric. India, Ent. Series, 12: 90.

Pupal case: Small in size, subelliptical in shape. Margin with one row of teeth; submarginal area not separated from dorsal disc. Thoracic tracheal folds and pores not discernible; caudal fold and pore distinct. Dorsum with rounded patches of suture-like markings. Vasiform orifice roundly subcordate. Operculum cordate, nearly filling orifice. Lingula hidden.

Adults: Antennae, in the male, with the second segment club-like and longest; the third segment arising near the proximal end of the second. Vasiform orifice subelliptical. Operculum subrectangular, nearly filling orifice. Lingula narrow and pointed, exposed, excluded. Claspers of male genitalia stout, with two rows of setae, tips pointed, with two small teeth below. Penis saber-shaped, slightly upcurved.

Genotype: *Aleuroclava complex* Singh, 1931.

Genus *Hempelia* Sampson and Drews

Hempelia Sampson and Drews, 1941, An. Esc. Nac. de Cien. Biol., 2: 166.

Pupal case: Medium in size, ovate in shape. Margin with two rows of teeth; submarginal area separated from dorsal disc by a faint line. Anterior portion of dorsal disc with a row of long setae; abdominal ridge fairly well developed. Vasiform orifice situated in a pit or depression, broadly cordate or subhemispherical. Operculum transversely rectangular, filling less than half of orifice. Lingula stoutly conical, slightly excluded.

Genotype: *Hempelia chivelensis* Sampson and Drews, 1941.

Genus *Aleuromigda* Singh

Aleuromigda Singh, 1931, Mem. Dept. Agric. India, Ent. Series, 12: 8. (Nomen nudum.)

With the exception of the characters given in the key in the previous pages, no others are known. Singh did not give a description of the genus, nor did he include any species.

Genus *Hesperaleyrodes* n. gen.

Pupal case: Small in size, ovate in shape. Margin with one row of teeth; submarginal area separated from dorsal disc by one or two lines, with two rows of simple pores. Vasiform orifice transversely elliptical. Operculum subhemispherical, nearly filling orifice. Lingula conical, excluded.

Genotype *Hesperaleyrodes michoacensis* n. sp.

This genus is related to *Tetraleyrodes* Cockerell, 1902, but differs essentially from it by having the vasiform orifice transversely subhemispherical and the lingula excluded.

Hesperaleyrodes michoacensis n. sp.

Pupal case: Size 0.778 mm. long by 0.503 mm. wide, shape ovate, narrowing posteriorly; margin with one row of teeth, some of which are bidentate, 14 teeth in 0.1 mm.; submarginal area with two interconnected rows of wax pores, giving the area a striated appearance; a distinct line occurs behind this area, and one or two lines separate the dorsal disc from the rest of the body; vasiform orifice transversely elliptical, wider than long, elevated; operculum subhemispherical, only faintly visible in cleared specimens; lingula conical and excluded, reaching nearly to posterior margin of case; two long setae occur near the front of the orifice, four short ones near the transverse thoracic slit, and two long ones in the cephalic region; posterior margin of case slightly prolonged.

Body dull black, covered by woolly wax.

Adults: Not known.

Collected by Prof. G. F. Ferris from *Quercus* sp. on the mountains south of Aquililla, Michoacan, Mexico, 1926.

Holotype and certain paratypes will be deposited in the collection of the Stanford Museum of Natural History; remaining paratypes will be retained in the collection of the author.

Genus *Tetraleyrodes* Cockerell

Tetraleyrodes Cockerell, 1902, Proc. Acad. Nat. Sci. Philadelphia, 54: 283. (Subgenus.)

Tetraleurodes Cockerell, Quaintance and Baker, 1914, U. S. Dept. Agric., Tech. Series, Ent., 27(2) : 107. (Genus.)

Pupal case: Variable in size, elliptical to broadly oval in shape. Margin with one row of teeth; submarginal area separated from dorsal disc by a line, fluted by suture-like lines, granulate or imbricate. Vasiform orifice subcordate, sometimes rounded, elevated. Operculum subcordate, sometimes rounded, filling most of orifice. Lingula hidden.

Adults: Fore wings often clouded. Vasiform orifice transversely elliptical. Operculum transversely subrectangular. Lingula stout, slightly knobbed at the tip, barely included. Claspers of male genitalia with a long slender apical tooth and several subapical teeth. Penis nearly as long as claspers, sharply upcurved at the tip.

Genotype: *Aleyrodes perileuca* Cockerell, 1903.

Genus *Aleuroputeus* Corbett

Aleuroputeus Corbett, 1935, Jour. Mus. Fed. Malay States, 17 : 846.

Pupal case: Medium in size, elliptical to subovate in shape. Margin toothed; submarginal area separated from dorsal disc by a chitinized fold, with a ring of setae. Abdominal segments submedially with tooth-like processes; conspicuous pores on median line of anterior segments. Vasiform orifice cordate to subcordate. Operculum transversely rectangular, recessed posteriorly, filling about half of orifice. Lingula hidden.

Genotype: *Aleuroputeus perseae* Corbett, 1935.

Genus *Aleurotithius* Quaintance and Baker

Aleurotithius Quaintance and Baker, 1914, U. S. Dept. Agric., Tech. Series, Ent., 27(2) : 106.

Pupal case: Medium in size, elliptical in shape. Margin irregularly toothed; submarginal area separated from dorsal disc by a row of small papillae, marked by many suture-like lines. Dorsal disc with groups of large mammiform papillae. Vasiform orifice broadly subcordate or roundly trapezoidal. Operculum transversely subelliptical, filling half of orifice. Lingula lobed, slightly exposed, included.

Adults: Labium extremely long. Ovipositor of female extremely long. Vasiform orifice transversely elliptical. Operculum transversely rectangular. Lingula thick, slightly excluded.

Genotype: *Aleurotithius timberlakei* Quaintance and Baker, 1914.

Genus *Neoaleurodes* Bondar

Neoaleurodes Bondar, 1923, Ind. e Obras Publ. da Bahia, Sec. Patol. Veg., p. 128.

Pupal case: Small in size, irregularly oval in shape. Margin entire; submarginal area with many striations running toward the margin. Vasiform orifice elliptical, but with the anterior margin straight; elevated, overhanging the last abdominal segment. Operculum elliptical. Lingula hidden.

Adults: Female with very long ovipositor.

Genotype: *Neoaleurodes clandestinus* Bondar, 1923.

Genus *Aleyrodes* Latreille

Aleyrodes Latreille, 1795, Magasin Encycl., 2: 304; 1804, Hist. Nat. Crustacés et Insèctes, 12: 347; 1807, Genera, 3: 174.

Aleyrodes Latreille, 1810, Considerations générales sur les Insèctes, pp. 265, 434. (Characters, type citation.)

Pupal case: Small to medium in size, elliptical in shape. Margin irregularly toothed. Dorsum rather plain. Vasiform orifice subcordate. Operculum roundly trapezoidal, filling about half of orifice. Lingula knobbed at tip, setose, exposed, included.

Adults: Fore wings usually with dusky patches, with two flexures in the radial sector vein. Vasiform orifice transversely elliptical. Operculum transversely rectangular. Lingula thick, knobbed, setose, excluded. Claspers of male genitalia thick, almost rectangular in outline; tips sharply curved inward. Penis simple, longer than half the length of claspers.

Genotype: *Phalaena (Tinea) protella* Linnaeus, 1758.

***Aleyrodes baja* n. sp.**

Pupal case: Size 1.095 mm. long by 0.770 mm. wide, shape broadly elliptical; margin chitinized, irregular to entire, at times striated, faintly toothed at caudal margin, 0.025 mm. wide; abdominal segments visible but not conspicuous; dorsum separated from the margin by a light line; vasiform orifice subcordate, reticulated, about as long as wide; operculum occupying about half of orifice; lingula visible, included; two setae on posterior margin of body.

Body yellowish, with a slight rim of wax.

Adults: Not known.

Collected from an unidentified tree, three miles south of Cataviña, Baja California, August 25, 1941, by G. E. Bohart and Dr. E. S. Ross.

This species is related to *Aleyrodes spiraeoides* Quaintance, from which it differs by having the margin chitinized.

Holotype and certain paratype material will be deposited in the California Academy of Science; remaining paratypes will be retained in the collection of the author.

Genus *Tetralicia* Harrison

Tetralicia Harrison, 1917, *Vasculum*, 3: 60; *Entomologist*, 50: 651.

Pupal case: Small in size, elliptical to ovate in shape. Margin with one row of teeth; submarginal area deflexed to meet shortened ventral disc, imbricate or granulate. Vasiform orifice subcordate, often elevated. Operculum subcordate, filling orifice. Lingula hidden. Posterior edge of case prolonged.

Genotype: *Tetralicia ericae* Harrison, 1917.

Genus *Corbettia* Dozier

Corbettia Dozier, 1934, *Ann. Mag. Nat. Hist.*, (10) 14: 190.

Pupal case: Medium in size, elongately elliptical in shape. Margin with one row of teeth; submarginal area with prominent setae, lateral area with a row of pores running nearly the entire length of each side; dorsum otherwise rather plain. Vasiform orifice subcordate. Operculum subcordate, filling about half of orifice. Lingula slightly exposed, included.

Genotype: *Corbettia millettiacola* Dozier, 1934.

Genus *Bulgarialeurodes* Corbett

Bulgarialeurodes Corbett, 1936, *Proc. Roy. Ent. Soc. London* (B), 5: 18.

Pupal case: Medium in size, elongately elliptical in shape. Margin with one row of teeth; submargin separated from dorsal disc by a chain of small pores. Vasiform orifice cordate. Operculum roundly semilunar, filling less than half of orifice. Lingula barely exposed.

Genotype: *Bulgarialeurodes rosae* Corbett, 1936.

Genus *Aleurocanthus* Quaintance and Baker

Aleurocanthus Quaintance and Baker, 1914, *U. S. Dept. Agric., Tech. Series, Ent.*, 27(2): 102.

Pupal case: Medium in size, elliptical to ovate in shape. Margin with one row of teeth. Dorsum with many prominent spines. Vasi-

form orifice small, rounded or subcordate, elevated. Operculum rounded or subcordate. Lingula hidden.

Adults: Wings usually very dark in color. Vasiform orifice subcordate or subcircular. Operculum transversely rectangular. Claspers of male genitalia thick, with a small tooth at the tips. Penis longer than half the length of claspers.

Genotype: *Aleyrodes spinifera* Quaintance, 1902.

Genus *Aleurotulus* Quaintance and Baker

Aleurotulus Quaintance and Baker, 1914, U. S. Dept. Agric., Tech. Series, Ent., 27(2) : 101.

Pupal case: Medium in size, elliptical or oval in shape. Margin with one row of teeth. Vasiform orifice somewhat subcordate. Operculum somewhat subcordate, nearly filling orifice. Lingula long, knobbed, usually excluded.

Adults: Vasiform orifice transversely subelliptical. Operculum more or less transversely rectangular. Lingula long, excluded. Claspers of male genitalia with an upcurved tooth at the tips. Penis longer than half the length of claspers, upcurved.

Genotype: *Aleurodes nephrolepidis* Quaintance, 1900.

Genus *Aleurocybotus* Quaintance and Baker

Aleurocybotus Quaintance and Baker, 1914, U. S. Dept. Agric., Tech. Series, Ent., 27(2) : 101.

Pupal case: Medium in size, narrowly elongate in shape. Margin with one row of teeth. Dorsum without papillae or pores; in the median area of the abdomen there is a series of pit-like structures. Vasiform orifice subcordate. Operculum trapezoidal, filling about half of orifice. Lingula slightly expanded at tip, exposed, included.

Adults: Antennae of male with seventh segment at least as long as all the others combined.

Genotype: *Aleurodes graminicolus* Quaintance, 1899.

Genus *Nealeyrodes* Hempel

Nealeyrodes Hempel, 1923, Rev. Mus. Paulista, 13 : 1144.

Pupal case: Large in size, pyriform in shape. Margin with one row of teeth. Vasiform orifice hemispherical or subcircular. Operculum hemispherical. Lingula slightly expanded at the tip, included.

Adults: Wings finely punctate. Claspers of male genitalia thick, upcurved, with a comb of teeth on the inner margin, very hairy.

Genotype: *Nealeyrodes bonariensis* Hempel, 1923.

Genus *Mexicaleyrodes* Sampson and Drews

Mexicaleyrodes Sampson and Drews, 1941, An. Esc. Nac. de Cien. Biol., 2: 166.

Pupal case: Small in size, ovate in shape. Margin with one row of teeth. Dorsum much elevated from venter; venter with a band of papilla-like structures just behind margin. Vasiform orifice sub-circular or very broadly cordate. Operculum broadly subcordate, almost trapezoidal, filling more than half of orifice. Lingula hidden.

Genotype: *Mexicaleyrodes contigua* Sampson and Drews, 1941.

Genus *Aleurocerus* Bondar

Aleurocerus Bondar, 1923, Ind. e Obras Publ. da Bahia, Sec. Patol. Veg., p. 156.

Pupal case: Variable in size, elliptical to ovoid in shape. Margin with two rows of teeth. Dorsum with medial ridge. Vasiform orifice obscured; posterior edge prolonged into a bifid horn. Operculum obscured. Lingula obscured.

Adults: Head somewhat triangular. Fore wings with dusky patches; radial sector vein strongly flexed in the middle.

Genotype: *Aleurocerus luxuriosus* Bondar, 1923.

The pupal cases of the species in this genus were stated in the original descriptions to be so densely black that the nature of the vasiform orifice could not be made out.

Genus *Zaphanera* Corbett

Zaphanera Corbett, 1926, Bull. Ent. Research, 16: 282.

Pupal case: Large in size, ovate in shape. Margin with two rows of teeth; submarginal area not separated from dorsal disc. Thoracic tracheal folds and caudal fold indicated, not distinct, pores or combs not indicated. Dorsum with small circular pores; cephalothorax with a well defined median area. Vasiform orifice subcordate, elevated. Operculum subcordate, filling orifice. Lingula hidden.

Genotype: *Zaphanera cyanotis* Corbett, 1926.

Genus *Laingiella* Corbett

Laingiella Corbett, 1926, Bull. Ent. Research, 16: 283.

Pupal case: Medium in size, broadly elliptical in shape. Margin with two rows of teeth; submarginal area not separated from dorsal disc. Dorsum with small compound-like pores. Vasiform orifice subcordate, elevated. Operculum subcordate, filling orifice. Lingula hidden.

Genotype: *Laingiella bambusae* Corbett, 1926.

Corbett considered this genus to have affinities with *Paraleyrodes* Quaintance because of the seemingly compound pores. These pores may have been misinterpreted. A detailed description of them was not given. The two rows of marginal teeth, the elevated vasiform orifice, and the operculum which fills the orifice indicate a position within the Aleyrodinae.

Genus *Luederwaldtiana* Hempel

Luederwaldtiana Hempel, 1923, Rev. Mus. Paulista, 13: 1151.

Pupal case: Small in size, oval in shape. Margin with two rows of teeth; submarginal area with a row of simple pores on each side; marginal band present. Central ridge present on dorsum. Vasiform orifice large, roundly rectangular, situated on a oval area with a posterior projection. Operculum hemispherical. Lingula expanded at the tip, exposed, included.

Genotype: *Luederwaldtiana eriosemae* Hempel, 1923.

Genus *Aleurothrixus* Quaintance and Baker

Aleurothrixus Quaintance and Baker, 1914, U. S. Dept. of Agric., Tech. Series, Ent., 27(2): 103.

Pupal case: Medium to small in size, elliptical in shape. Margin with two rows of teeth. Dorsum with a few setae along the median line. Vasiform orifice small, transversely elliptical. Operculum more or less transversely elliptical, nearly filling orifice. Lingula hidden.

Genotype: *Aleyrodes howardi* Quaintance, 1907.

Subgeneric names: *Aleurothrixus* Quaintance and Baker, 1917; *Philodamus* Quaintance and Baker, 1917.

Genus *Aleuromarginatus* Corbett

Aleuromarginatus Corbett, 1935, Ann. Mag. Nat. Hist., (10)16: 246.

Pupal case: Medium in size, elliptical in shape. Margin with two rows of teeth; submarginal area not separated from dorsal disc, but sometimes differentiated. Thoracic tracheal folds absent, but caudal fold may merely be indicated, neither pores nor combs evident. Vasiform orifice cordate. Operculum roundly trapezoidal, filling about half of orifice. Lingula knobbed, exposed, included.

Genotype: *Aleuromarginatus tephrosiae* Corbett, 1935.

Genus *Pentaleyrodes* Takahashi

Pentaleyrodes Takahashi, 1937, Kontyu, 11: 310.

Pupal case: Medium in size, elliptical in shape. Margin with two rows of teeth; submarginal area not separated from dorsal disc, but with a row of setae, each of which arises from a small, centrally constricted tubercle. Thoracic tracheal folds and pores absent, caudal fold barely indicated. Vasiform orifice subcordate. Operculum subcordate, filling more than half of orifice. Lingula hidden.

Genotype: *Pentaleyrodes cinnamoni* Takahashi, 1937.

Genus *Aleurotrachelus* Quaintance and Baker

Aleurotrachelus Quaintance and Baker, U. S. Dept. Agric., Tech. Series, Ent., (27)2: 103.

Pupal case: Medium to small in size, elliptical in shape. Margin with two rows of teeth; submarginal area not separated from dorsal disc, but along each side near the center there is a prominent fold. Dorsum with a prominent central ridge, terminating cephalad in a more or less arrow-shaped figure. Vasiform orifice small, broadly cordate. Operculum usually subcordate and filling most of orifice. Lingula usually hidden, when visible, slightly expanded at tip.

Genotype: *Aleurodes tracheifer* Quaintance, 1900.

Subfamily **URALEYRODINAE** Sampson and Drews

Uraleyrodiinae Sampson and Drews, 1941, An. Esc. Nac. de Cien. Biol., 2: 180.

Pupal case: Large in size, elliptical in shape, thick. Margin with one row of teeth. Thoracic tracheal folds and pores absent; caudal fold absent. Simple pores present. Vasiform orifice absent; anal opening a narrow transverse slit hidden by caudal horn.

Genus *Uraleyrodes* Sampson and Drews

Uraleyrodes Sampson and Drews, 1941, An. Esc. Nac. de Cien. Biol., 2: 180.

Pupal case: Large in size, elliptical in shape. Margin with one row of teeth; submarginal area separated from dorsal disc by a distinct line; marginal area with a row of small pores. Dorsal abdominal ridge fairly prominent. Anal opening overhung by a bifid caudal horn bearing two long hairs, the opening being a narrow transverse slit.

Genotype: *Uraleyrodes ceriferus* Sampson and Drews, 1941.

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